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THE FOREST SITUATION IN WAYNE AND SUSQUEHANNA COUNTIES PENNSYLVANIA

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This is the last of a series of seven brief reports on the forest condition in the counties of the Anthracite Forest Region. This region includes 15 counties shown on the map on the back of this publication, which contain or surround the hard-coal deposits of Pennsylvania. Because of basic similarities, Wayne and Susquehanna Counties are treated together. The purpose is to present tabular data from the Anthracite Forest Survey for local use, together with enough general information about the two counties to make the forest situation understandable. Forest areas and present condition of the forest were determined through interpretation of aerial photographs, and the distribution of the major forest types was ascertained largely by reconnaissance. Data on species, size-classes, volume, and growth applicable to the several forest types and condition classes were collected by detailed field surveys.

Acknowledgment is made to John A. Buttrick and Donald F. Robinson for aid in compiling and writing the report, and to Robert Bartlett for preparation of charts and maps.

FOREST SITUATION IN WAYNE AND SUSQUEHANNA COUNTIES

PENNSYLVANIA

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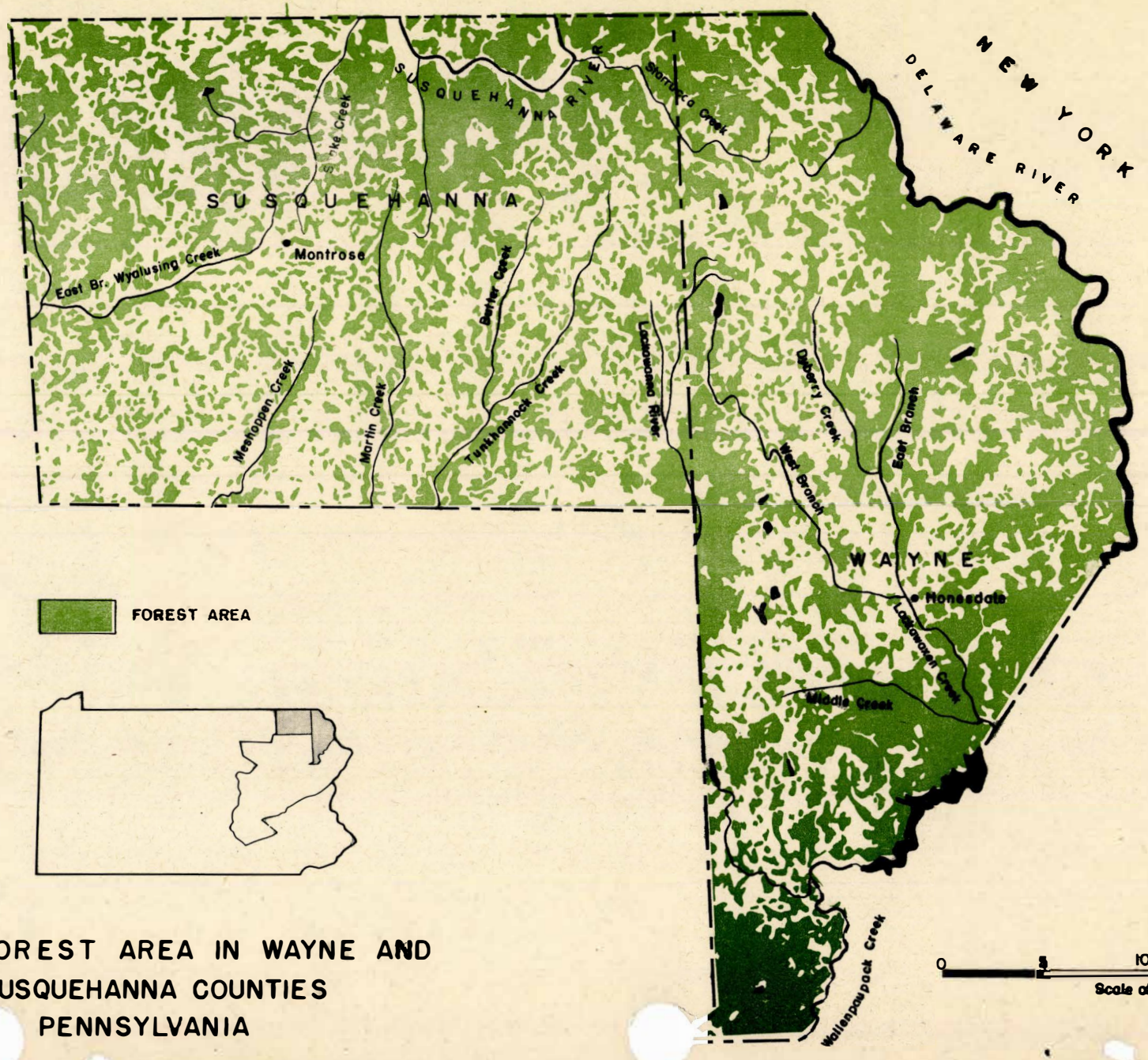


FIGURE 1.- FOREST AREA IN WAYNE AND SUSQUEHANNA COUNTIES PENNSYLVANIA

THE FOREST SITUATION IN WAYNE AND SUSQUEHANNA COUNTIES

Wayne and Susquehanna Counties are a partially-cleared forested upland with a scattered rural population. Although near metropolitan centers, most of the area gives an impression of remoteness. This impression is intensified in the northern sections by the abandonment of farms and the gradual reversion of what once was farmland to forest.

General Description

Wayne and Susquehanna Counties lie on the northeast extremity of the Allegheny Plateau. At this point the plateau is a very uneven and deeply-eroded tableland with a spinal ridge of mountains that rise in places to over 2600 feet. Streams flow in all directions from this central highland. The Lackawaxen and several lesser streams flow east to the Delaware, which forms the eastern boundary of Wayne. The Lackawanna River flowing south, the Tunkhannock and Meshoppen Creeks flowing southwest, and a number of other streams flowing west and north empty into the Susquehanna River. This river cuts into the northern part of Susquehanna County and then makes a wide circuit through New York State and Bradford and Wyoming Counties. Both Wayne and Susquehanna Counties are dotted with glacier-formed lakes and swamps, the total water surface of the two counties amounting to nearly 13,000 acres. A large artificial lake, Wallenpaupack, lies on the boundary between Wayne County and Pike. The northern tip of the northern coal field extends into the southwest corner of Susquehanna and adjoining parts of Wayne. The total area of the two counties is 1600 square miles, or 1,024,000 acres.

Transportation

Transportation facilities are good. The Erie and the New York, Ontario, and Western railroads serve both counties. The Delaware, Lackawanna, and Western and the Lehigh Valley cross Susquehanna County from south to north. In addition there are nearly 1000 miles of improved State highway and a network of rural roads that reach to virtually all parts of the area.

Population

The population is relatively sparse. In 1940 it totaled 63,827, a decrease of 6387 since the beginning of the century. Of the whole population, 43 percent (27,664) lives on farms, and another 35 percent is non-farm rural dwellers. The largest settlement, Honesdale, the county seat of Wayne County, had in 1940 a population of only 5687. The second largest borough is Forest City in the coal-field area, with a population of 4266. Others of some consequence are Susquehanna Depot, Montrose, the county seat of Susquehanna County, and Hawley.

Occupations

The principal occupation of the area is dairy farming. Except for the region south of Montrose and a small area near Honesdale, the land is rated as submarginal for agriculture 1/, and even dairying is on a marginal basis. Nevertheless there were 6061 farms in the two counties in 1940. A considerable proportion of what once was farmland has been abandoned or converted to other uses. There were 220,814 acres in use as cropland in 1940. The agricultural output of the area consists principally of dairy products, hay, corn, potatoes, and fruit. The total farm income is approximately $13,000,000 a year (1939).

There is some manufacturing but the total value of manufactured products produced in 1940 was only $5,988,600 2/. Altogether there are 70 manufacturing plants in the two counties with an employment of 1852 persons. Five of these plants employ more than 100 persons each, a textile company in Honesdale, the Erie railroad repair shops at Susquehanna Depot, a coal company operating near Forest City, a wood-turning plant in South Montrose, and a metal products factory in Honesdale.

1/ Reconnaissance Land Utilization Map of Pennsylvania, Penna. State College, School of Agriculture & Experiment Station. May 1935.

2/ Tenth Industrial Directory of the Commonwealth of Penna.; Dept. of Internal Affairs; compiled by Bureau of Statistics, Harrisburg 1941.

OCCUPATIONS OF POPULATION: 3/

Total population		63,827	
Not in labor force		40,657	72%
In labor force		23,170	28%
Unemployed		4,097	18%
Employed		19,073	82%
Agriculture		7,265	39%
Trade and service		6,119	33%
Manufacturing			
Metal	281)		
Textile	1,003)		
Food	281)	2,175	11%
Other	610)		
Transportation		1,187	6%
Construction		925	5%
Forest products industries			
Forestry	28)		
Logging	225)		
Milling	168)	664	3%
Wood manufacture	232)		
Paper manufacture	11)		
Coal mining		662	3%
Quarrying and other mining		76	1%

Recreational facilities are not so numerous and elaborate as in the adjoining Pocono region, but hunters and fishermen find much that is attractive in these two counties. The largest of the State fish hatcheries is at Pleasant Mount in Wayne County, and many of the lakes and streams in this area are stocked by the State Fish Commission. There are also five State game preserves, and rabbits and squirrels are plentiful throughout Susquehanna County. Some public camp sites have been established along Lake Wallenpaupack.

3/ This table, based on the U. S. Census for 1940, indicates the primary occupations of the residents of Wayne and Susquehanna Counties. The figures given in the text, on the other hand, are based on the employment provided by the industries located within these counties. Discrepancies are due to the fact that some people live in one area and work in another.

Forest Description

Early records indicate that the forests in these two counties were originally fine hardwood stands with what one writer calls "a suitable proportion of white pine and hemlock." 4/. Lumbering operations began in this area at an early date. There was a sawmill in Wayne County in 1762 and one in Susquehanna in 1789. Since then virtually the entire area has been cut over at least once. In recent years there has been some operation for mine timbers, but the principal forest product has been lumber. In the higher elevations of Wayne County some damage has been done by ice storms. Fires have rarely been serious in the area.

Forest area

The present forests of these two counties cover about 562,600 acres, or 55 percent of the whole area (fig. 1) 5/. For the most part they are in scattered blocks of comparatively small acreage. Around the coal fields and along the boundary of Pike County are somewhat more extensive forest tracts. Over 90 percent of the forest is in tracts of 50 acres or larger 6/.

	WAYNE		SUSQUEHANNA	
	Acres	Percent	Acres	Percent
Forest land	293,900	60	268,700	50
Nonforest	192,200	40	269,300	50
Gross area	486,100	100	538,000	100

4/ E. C. Blackman, History of Susquehanna County, 1873, quoting a letter dated 1821.

5/ Maps showing the location of all forest tracts are available in a scale 1" = 1 mile for each county. These maps may be ordered through the Northeastern Forest Experiment Station, 614 Bankers Securities Bldg., Philadelphia 7, Pennsylvania. A postal or express money order, draft, or check made out to the Treasurer of the United States, covering the full amount, should accompany the order. Prints will be forwarded from the Forest Service, Division of Engineering in Washington, D.C. Each map will cost: Wayne $ .68, Susquehanna $ .56.

6/ For detailed tables on each county see Appendix.

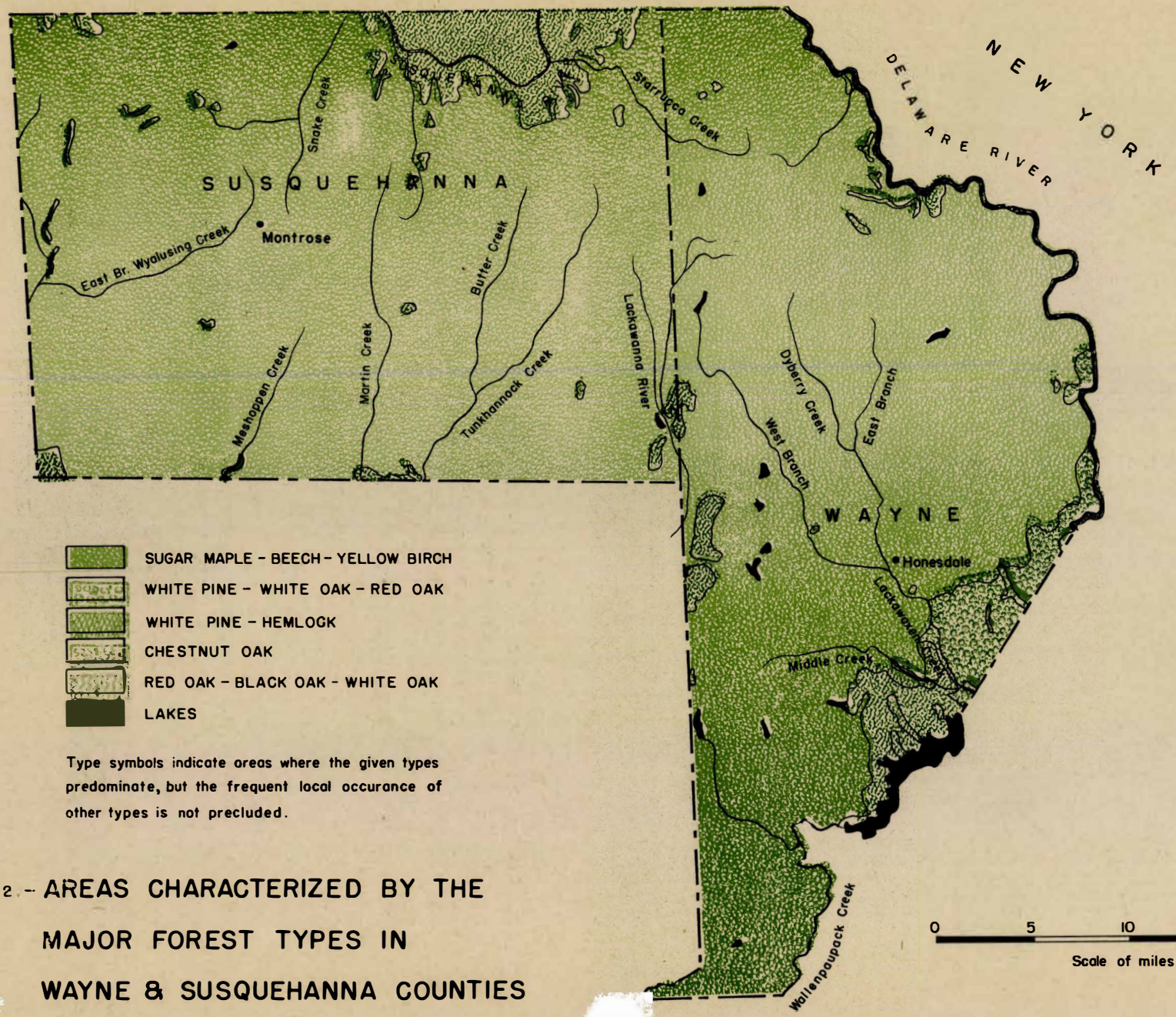


FIGURE 2 - AREAS CHARACTERIZED BY THE MAJOR FOREST TYPES IN WAYNE & SUSQUEHANNA COUNTIES

Forest types

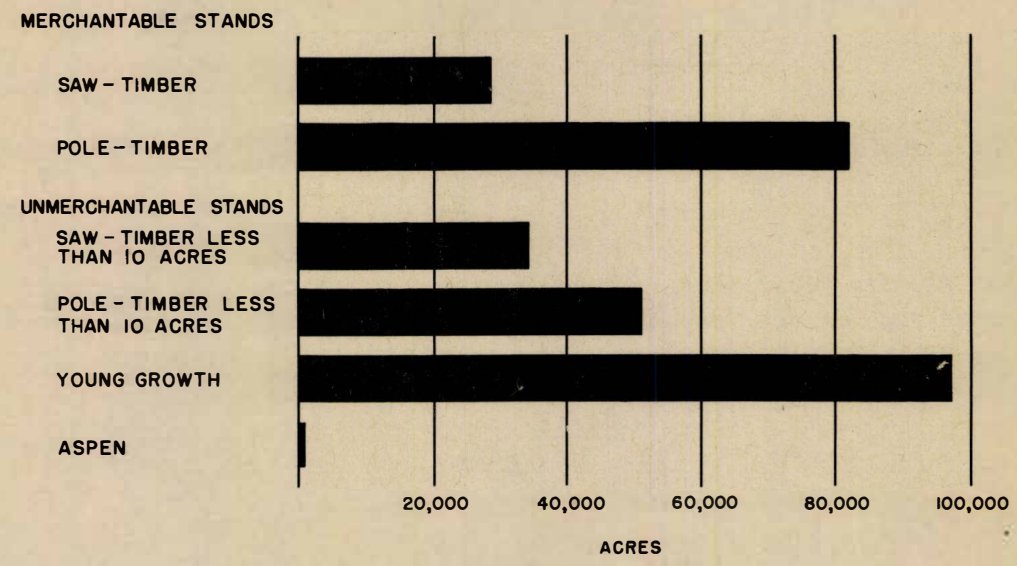
There is little variation in forest type (fig. 2). Of the entire forest area 80 percent is in the sugar maple - beech - yellow birch type. Another 10 percent is in the white pine - hemlock type, scattered in small stands through the two counties. Some oak and white pine - oak stands are to be found in the vicinity of Great Bend, along the boundary of Pike County, and in small tracts elsewhere. There are negligible quantities of chestnut oak in Susquehanna County and three or four small patches of aspen, gray birch and pin cherry.

Forest Condition

Over half the forest area in Wayne and Susquehanna Counties is unmerchantable (fig. 3)7/. Virtually all the virgin timber has been removed; but in many places the forests have grown back to fairly well-stocked second-growth stands. Also a considerable amount of cleared land is reverting to forest. This young growth is largely in the fast-growing and valuable sugar maple - beech - yellow birch type. The white pine is tending to disappear in favor of the hardwoods.

7/ The condition classes recognized are: 1. Saw-timber stands: stands of 10 acres or larger, each of which contains at least 2000 board feet of saw timber. 2. Pole-timber stands: stands of 10 acres or larger, each acre of which contains a minimum timber volume of approximately 5 standard cords in trees 5.0 inches diameter breast high (hereafter denoted by the initials d.b.h.) and larger, and less than 2000 board feet of saw timber. 3. Unmerchantable stands: areas of forest land which contain less than the minimum volume for pole-timber stands, plus stands of saw timber and pole timber of less than 10 acres in extent, whether isolated tracts or stands within larger forest areas.

WAYNE COUNTY



SUSQUEHANNA COUNTY

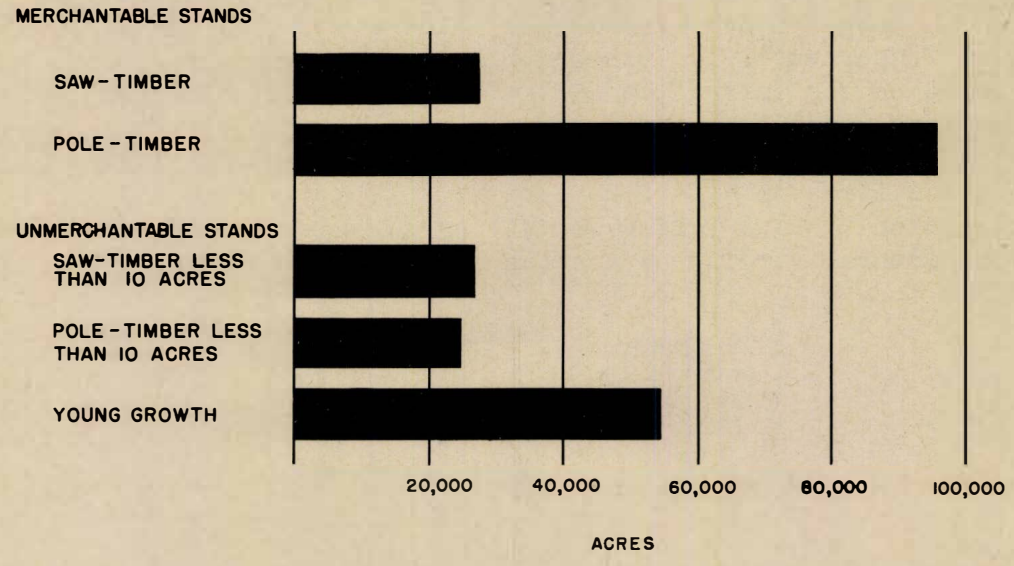


Figure 3.- THE CONDITION OF THE FOREST

Timber volume

The volume of saw timber and the total green weight of all timber are shown in the following table 8/.

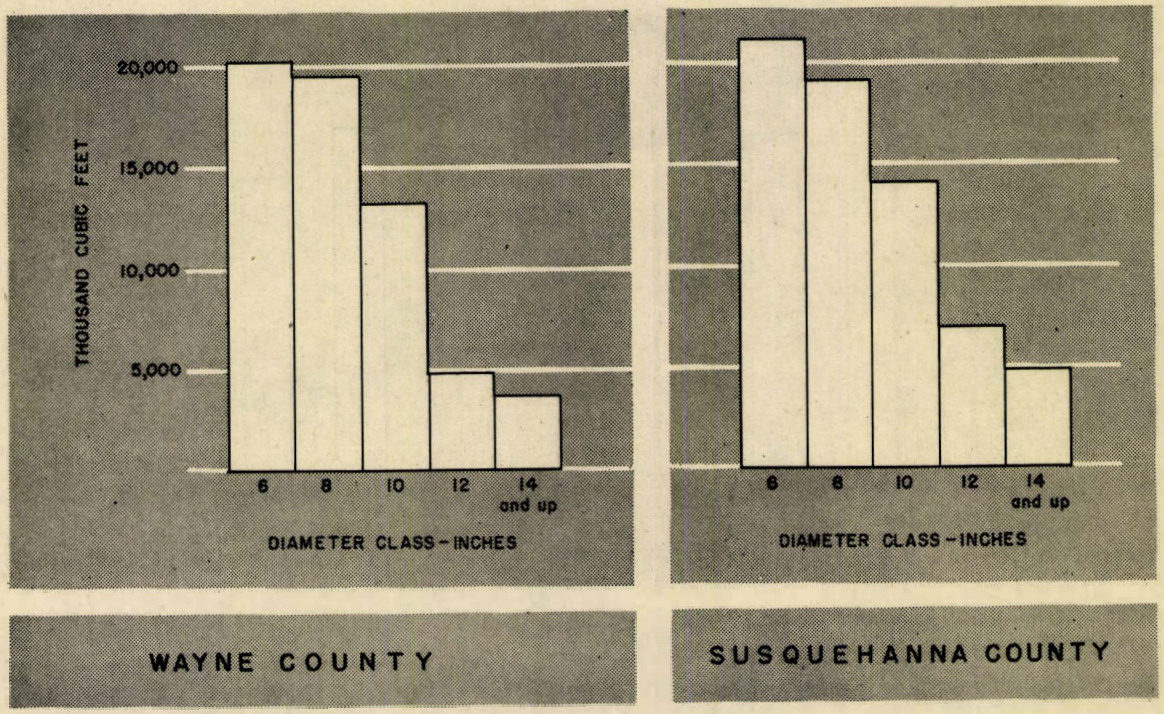
	WAYNE		SUSQUEHANNA	
	Saw timber M bd.ft.	Total green weight Tons	Saw timber M bd.ft.	Total green weight Tons
Saw-timber stands	138,200	1,248,700	129,600	1,160,100
Pole-timber stands	100,100	1,662,900	102,900	1,766,300
Unmerchantable stands	126,300	2,036,800	101,900	1,595,000
Total	364,600	4,948,400	334,400	4,521,400

The distribution of the cubic-foot volume in the merchantable pole-timber stands by tree size may be seen in figure 4. Over half the green weight of all timber is in hardwoods other than oaks, hickory, and sugar maple.

	WAYNE		SUSQUEHANNA	
	Tons	Percent	Tons	Percent
Conifers	99,100	6	160,500	9
Oaks, hickory, sugar maple	411,900	25	137,400	25
Other hardwoods	1,151,900	69	1,168,400	66
Total	1,662,900	100	1,766,300	100

8/ Saw-timber volume is the net board foot volume of sawlog-size material in conifers 9.0 inches d.b.h. and larger, plus the net volume of sawlog-size material in hardwoods 11 inches d.b.h. and larger. Board foot volumes were based on the International 1/4" log rule, which closely approximates green lumber tally. Deductions were made for cull. Total green weight is the weight of all trees 5.0 inches and larger, including bark and the tops and limbs to a 4-inch diameter. This was computed in cubic feet and converted to tons (green weight) by the application of cubic foot-per-ton factors, varying by species groups and averaging about 35 cubic feet per ton.

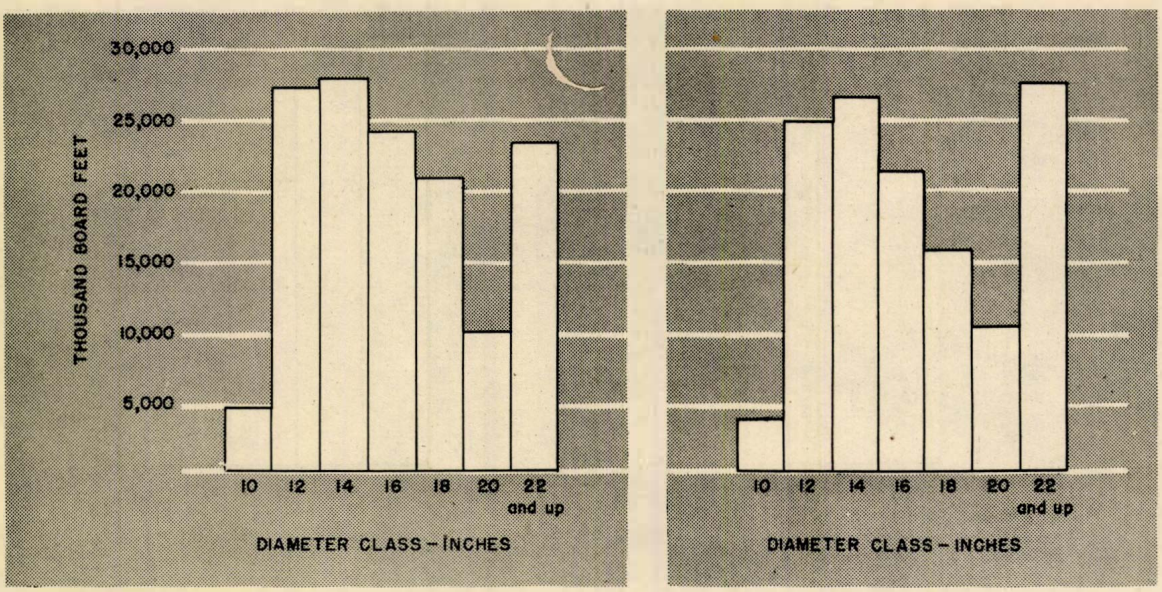
Figure 4. – CUBIC FOOT VOLUME IN MERCHANTABLE POLE-TIMBER STANDS BY DIAMETER CLASSES – ALL SPECIES.



The merchantable saw-timber stands are largely in young growth. A little virgin timber survives. But half the saw-timber acreage in the two counties has less than 4000 board feet to the acre, and only about an eighth has a per-acre volume of more than 8000 board feet.

	WAYNE		SUSQUEHANNA	
Thousand Board Feet per Acre	Acres	M bd.ft.	Acres	M bd.ft.
8 and more	4,100	45,100	3,800	38,700
6 to 8	5,200	35,400	4,300	28,100
4 to 6	4,400	19,400	6,300	29,200
2 to 4	15,000	38,300	13,000	33,600
Total	28,700	138,200	27,400	129,600

Figure 5.- BOARD FOOT VOLUME IN MERCHANTABLE SAW-TIMBER STANDS BY DIAMETER CLASSES - ALL SPECIES.



WAYNE COUNTY

SUSQUEHANNA COUNTY

The distribution of the trees in saw-timber stands by species shows a much higher percentage of conifers than in the pole-timber stands.

	WAYNE		SUSQUEHANNA	
	M bd.ft.	Percent	M bd.ft.	Percent
Conifers	34,800	25	40,400	31
Oaks, hickory, sugar maple	23,200	17	22,000	17
Other hardwoods	80,200	58	67,200	52
Total	138,200	100	129,600	100

The distribution of this volume in saw-timber stands by tree size may be seen in figure 5.

Current Forest Growth

The following table shows the total timber growth and the saw-timber growth of the different condition classes in the two counties:

1943

Total timber growth

	WAYNE M cu.ft.	SUSQUEHANNA M cu.ft.
Saw-timber stands	1,864	1,745
Pole-timber stands	3,803	4,080
Unmerchantable stands	5,644	2,745
Total timber growth	11,311	8,570

Saw-timber growth

	M bd.ft.	M bd.ft.
Saw-timber stands	6,350	5,910
Pole-timber stands	3,200	4,320
Unmerchantable stands	8,970	5,500
Total saw-timber growth	18,520	15,730

Forest Products Industries

Lumbering has been an important industry in the two counties for many years and in a lesser degree still is. In 1942 there were 56 sawmills, and the total production was about 23.5 million board feet. The greater part of this was shipped to New York State for sale. Mine timber production is carried on in a small way in the neighborhood of the coal fields. Some maple sugar also is produced. The number of sawmills by production classes is shown below:

Production class Thousand board feet	WAYNE Number of Mills	SUSQUEHANNA Number of Mills
Idle	5	0
1 to 50	3	3
50 to 500	15	15
500 to 1000	5	5
Over 1000	2	3
Total	30	26

Other wood-using manufactures are almost non-existent. Besides the wood-turning plant in South Montrose, which was employing 112 persons in 1940, there are a spool and bobbin factory in Honesdale employing 38 persons and two planing mills employing two persons each.

Forest Land Ownership

94 percent of the forest land in Wayne and Susquehanna Counties is privately owned, and only 6 percent is in public ownership. The coal and water companies own about 2 percent, and farmers own 32 percent. The remaining 60 percent is held by other private owners, the greater part of it in small tracts. The ownership distribution is as follows:

	WAYNE Acres	SUSQUEHANNA Acres
Public Ownership		
State Game Commission	10,700	10,900
County	2,600	10,800
Total public ownership	13,300	21,700
Private ownership		
Coal companies	5,000	2,500
Water companies	1,100	1,300
Farmers	88,100	93,500
Others	186,400	149,700
Total private ownership	280,600	247,000

Future Outlook in Brief

The importance of the forests in the economy of Wayne and Susquehanna Counties will almost certainly increase as the years go by. Crop-raising has already given way very largely to dairy farming. Now even dairy farming is being given up in many sections. Soil and site are such that timber production is probably the most profitable use to which much of the land can be put.

The development of as productive forests as possible is therefore of primary importance, and definite measures to this end should be taken.

1. Selective cutting should be carried on far more wisely than at present. This method of forest management has proved successful in achieving a continuous and high-quality yield from forests of the sugar maple - beech - yellow birch type. In the neighborhood of the mines thinnings and improvement cuttings can produce mine timbers. Elsewhere they can be used for fuelwood or fence posts. So far as possible the better trees should be allowed to mature for high quality utilization.

2. Reforestation is taking place naturally on many abandoned open sites. But the species composition so achieved is not always the most desirable. In many places the best results are to be obtained by planting. Mixed conifers could be planted at low cost. The survival of this type of plantation is usually good; and the proportion of

softwoods in the two counties is even now too small to meet the local demand. Reestablishment of forest cover at the headwaters of streams such as the Lackawaxan will aid in reducing flood levels.

3. The establishment of forest cooperatives might be of value in this area. Practically all the conditions for the successful operation of cooperative sawmills are present. Large acreages of forest are in small resident-owned woodlands. A fair proportion of these have merchantable timber on them now, and proper management will increase the amount. Many forest land owners have a slack period during the winter months in which to do woods work, inasmuch as they are primarily engaged in agriculture. The woodland of most owners is not sufficiently extensive to warrant the building of private mills. Highway facilities for the transportation of logs are excellent, and good lumber markets are numerous and near at hand.

4. Educational activities should be increased. The large number of private owners in this area means that full rehabilitation of the forests depends on a wide dissemination of information concerning good forest practices.

5. Public ownership should probably be extended. Considerable acreage in this area is too poor in site and would require too long for the establishment of merchantable stands to be a profitable private investment. Moreover, public agencies are in a position to develop it for the multiple purposes of game production, watershed protection, recreation, and timber production. The counties and communities might well consider the development of public forests.

APPENDIX

Tables 1 to 9 - Wayne County

Tables 1 to 9 - Susquehanna County

WAYNE COUNTY

Table 1.--Land use

Land use	Area acres	Proportion of class percent	Proportion of gross area percent
Forest 1/			
Tracts less than 10 acres	8,800	3.0	1.8
Tracts 10 up to 50 acres	12,200	4.1	2.5
Tracts 50 acres and over	272,900	92.9	56.1
All forest land	293,900	100.0	60.4
Nonforest			
Cropland 2/	88,400	46.0	18.2
Mine 1/	100	0.1	-
Water 2/	10,500	5.5	2.2
Other	93,200	48.4	19.2
All nonforest land	192,200	100.0	39.6
Gross area	486,100		100.0

1/ Based on aerial photographs taken in 1937, 1938, 1939.

2/ Bureau of the Census, 1940.

Table 2.-- Forest area by minor civil divisions

Civil Division 1/	Gross area acres	Nonforest area acres	Forest area acres	Proportion gross area in forest percent	Proportion of county forest land percent
Berlin t.	25,300	9,200	16,100	63.5	5.5
Buckingham t.	29,700	11,000	18,700	62.8	6.4
Canaan t., Waymart b.	14,200	5,200	9,000	63.2	3.1
Cherry Ridge t.	14,300	7,600	6,700	46.7	2.3
Clinton t.	24,600	10,000	14,600	59.5	5.0
Damascus t.	53,400	23,200	30,200	56.6	10.3
Dreher t.	11,100	2,900	8,200	73.6	2.8
Dyberry t., Bethany b. Prompton b.	16,400	9,100	7,300	44.7	2.5
Lake t.	19,200	7,700	11,500	59.7	3.9
Lebanon t.	24,600	8,500	16,100	65.5	5.5
Lehigh t.	7,800	600	7,200	92.4	2.4
Manchester t.	28,900	8,100	20,800	71.9	7.1
Mt. Pleasant t.	37,600	16,700	20,900	55.7	7.1
Oregon t.	11,200	5,200	6,000	53.6	2.0
Palmyra t., Hawley b.	11,100	1,800	9,300	83.8	3.2
Paupack t.	20,800	5,400	15,400	74.0	5.2
Preston t., Starrucca b.	38,400	20,800	17,600	45.7	5.9
Salem t.	20,700	9,900	10,800	52.3	3.7
Scott t.	29,400	8,800	20,600	70.2	7.0
S. Canaan t.	17,800	9,700	8,100	45.3	2.7
Sterling t.	17,600	5,000	12,600	71.8	4.3
Texas t., Honesdale b.	12,000	5,800	6,200	51.4	2.1
All civil divisions	486,100	192,200	293,900	60.4	100.0

1/ Abbreviations: t. - township, b. - borough.

Table 3.--Forest area by forest types and conditions

Forest type	Saw-timber stands		Pole-timber stands		Unmerchantable stands		All stands	
	acres	percent	acres	percent	acres	percent	acres	percent
Northern hardwoods	21,000	73.2	67,700	82.4	137,600	75.1	226,300	77.0
Aspen - gray birch - pin cherry	--	--	--	--	100	0.1	100	*
White pine - hemlock	6,500	22.6	8,800	10.7	17,300	9.5	32,600	11.1
White pine - white oak - red oak	800	2.8	3,200	3.9	13,500	7.4	17,500	6.0
White oak - red oak - black oak	400	1.4	2,500	3.0	14,500	7.9	17,400	5.9
All types	28,700	100.0	82,200	100.0	183,000	100.0	293,900	100.0

* Negligible

Table 4.--Volume by Forest types

Forest type	Saw-log volume M bd.ft.	Total volume M cu.ft.
Sugar maple - beech - yellow birch	221,200	145,270
Aspen - gray birch - pin cherry	--	30
White pine - hemlock	59,200	26,670
White pine - white oak - red oak	11,600	8,170
Red oak - black oak - white oak	9,100	6,390
Chestnut oak	--	--
Scrub oak	--	--
Other	--	--
All forest types	301,100	186,530

Table 5.--Forest area by forest conditions and volume-per-acre classes

Forest condition and volume-per-acre classes	Area	Proportion of each condition	Proportion of total forest land
	acres	percent	percent
Merchantable:			
Saw-timber stands 1/ (bd. ft. per acre)			
8,000 and over	4,100	14.3	1.4
6,000 to 7,999	5,200	18.1	1.8
4,000 to 5,999	4,400	15.3	1.5
2,000 to 3,999	15,000	52.3	5.1
All saw-timber stands	28,700	100.0	9.8
Pole-timber stands 2/ (cords per acre)			
10.0 and over	35,100	42.7	11.9
5.0 to 9.9	47,100	57.3	16.1
All pole-timber stands	82,200	100.0	28.0
All merchantable stands	110,900		37.8
Unmerchantable:			
Saw-timber stands less than 10 acres	34,400		11.7
Pole-timber stands less than 10 acres	51,200		17.4
Young growth stands	97,300		33.1
Aspen stands	100		*
All unmerchantable stands	183,000		62.2
All forest land	293,900		100.0

1/ In stands 10 acres or larger each acre of which has at least 2,000 board feet (lumber tally).

2/ In stands 10 acres or larger each acre of which has at least 5 cords (400 cubic feet) but less than 2,000 board feet.

Table 6.--Volume by forest conditions and volume-per-acre classes

Forest condition and volume-per-acre classes	Saw-timber volume (lumber tally) 1/		Total volume (including bark)			
	M bd.ft.	percent	M cu.ft.	percent	cords	tons
Merchantable:						
Saw-timber stands (bd. ft. per acre)						
8,000 and over	45,100	15.0	11,790	6.3	154,000	305,900
6,000 to 7,999	35,400	11.8	11,280	6.1	147,100	292,200
4,000 to 5,999	19,400	6.4	7,310	3.9	95,500	189,800
2,000 to 3,999	38,300	12.7	17,760	9.5	231,900	460,800
All saw-timber stands	138,200	45.9	48,140	25.8	628,500	1,248,700
Pole-timber stands (cords per acre)						
10.0 and over	22,900	7.6	34,750	14.0	459,400	939,500
5.0 to 9.9	13,700	4.6	26,780	19.0	353,700	723,400
All pole-timber stands	36,600	12.2	61,530	33.0	813,100	1,662,900
All merchantable stands	174,800	58.1	109,670	58.8	1,441,600	2,911,600
All unmerchantable stands	126,300	41.9	76,860	41.2	1,024,800	2,036,800
All forest land	301,100	100.0	186,530	100.0	2,466,400	4,948,400

1/ Based on the International 1/4-inch rule which closely approximates green lumber tally.

Table 7.--Volume in merchantable stands by species groups

Merchantable class and species group	Saw-timber volume (lumber tally)		Total volume (including bark)					
	M bd.ft.	percent	M cu.ft.	percent	cords 1/	percent	tons 2/	percent
Saw-timber stands								
Conifers	34,800	25.2	8,470	17.6	99,600	15.9	176,100	14.1
Oaks, hickory, and hard maple	23,200	16.8	9,340	19.4	124,500	19.8	272,300	21.8
Other hardwoods	80,200	58.0	30,330	63.0	404,400	64.3	800,300	64.1
All species	138,200	100.0	48,140	100.0	628,500	100.0	1,248,700	100.0
Pole-timber stands								
Conifers	8,300	22.6	4,610	7.5	54,200	6.7	99,100	6.0
Oaks, hickory, and hard maple	7,500	20.5	13,840	22.5	184,500	22.7	411,900	24.8
Other hardwoods	20,800	56.9	43,080	70.0	574,400	70.6	1,151,900	69.2
All species	36,600	100.0	61,530	100.0	813,100	100.0	1,662,900	100.0
All merchantable stands	174,800		109,670		1,441,600		2,911,600	

1/ Based on 85 cubic feet per cord for conifers and 75 cubic feet per cord for hardwoods.

2/ Based on cubic feet-per-ton converting factors for the principal species.

Table 8.--Board foot volume in merchantable saw-timber stands by diameter classes and species groups

Diameter class (d.b.h.)	Conifers 1/		Oaks, hickory hard maple 2/		Other hardwoods 3/		All species	
(Inches	M bd.ft.	Percent	M bd.ft.	percent	M bd.ft.	percent	M bd.ft.	percent
10	4,800	13.9					4,800	3.5
12	6,200	17.8	3,600	15.4	17,500	21.8	27,300	19.8
14	6,000	17.3	4,600	19.9	17,300	21.6	27,900	20.2
16	6,000	17.2	3,000	13.0	15,100	18.9	24,100	17.4
18	5,900	16.8	3,100	13.1	11,800	14.7	20,800	15.0
20	1,400	4.0	1,500	6.6	7,100	8.8	10,000	7.2
22 & up	4,500	13.0	7,400	32.0	11,400	14.2	23,300	16.9
All classes	34,800	100.0	23,200	100.0	80,200	100.0	138,200	100.0

1/ Principally hemlock and white pine, with some pitch pine and red spruce.

2/ Principally hard maple with some white, red and chestnut oak.

3/ Principally red maple, beech, white ash, and yellow birch with some black cherry, basswood, black birch and elm.

Table 9.--Cubic foot volume in merchantable pole-timber stands by diameter classes and species groups

Diameter class (d.b.h.)	Conifers 1/			Oaks & hard maple 2/			Other hardwoods 3/			All species		
inches	M cu.ft.	percent	tons	M cu.ft.	percent	tons	M cu.ft.	percent	tons	M cu.ft.	percent	tons
6	1,290	28.0	27,700	4,680	33.8	139,200	14,170	32.9	379,000	20,140	32.7	545,900
8	1,180	25.6	25,400	4,100	29.6	121,900	14,220	33.0	380,100	19,500	31.7	527,400
10	1,000	21.8	21,600	3,030	21.9	90,200	9,220	21.4	246,500	13,250	21.6	358,300
12	770	16.6	16,500	870	6.3	26,000	3,230	7.5	86,400	4,870	7.9	128,900
14 & up	370	8.0	7,900	1,160	8.4	34,600	2,240	5.2	59,900	3,770	6.1	102,400
All classes	4,610	100.0	99,100	13,840	100.0	411,900	43,080	100.0	1,151,900	61,530	100.0	1,662,900

1/ Principally hemlock and white pine with some pitch pine and red spruce

2/ Principally hard maple with some hickory and red, white, chestnut, and scarlet oak

3/ Principally red maple, beech, yellow birch, white ash and black birch with some black cherry, aspen, basswood, elm, red birch, gray birch, ironwood, and dogwood.

Table 1.-- Land use

Land use	Area Acres	Proportion of class Percent	Proportion of gross area Percent
Forest 1/			
Tracts less than 10 acres	6,000	2.6	1.1
Tracts 10 up to 50 acres	8,200	3.6	1.5
Tracts 50 acres and over	215,100	93.8	40.0
All forest land	229,300	100.0	42.6
Nonforest			
Cropland 2/	132,400	42.9	24.6
Mine waste 1/	100	*	*
Water 2/	2,200	0.7	0.4
Other	174,000	56.4	32.4
All nonforest land	308,700	100.0	57.4
Gross	538,000		100.0

1/ Based on aerial photographs taken in 1937 and 1939

2/ Bureau of the Census, 1940.

* Negligible

Table 2.--Forest area by minor civil divisions

Civil Division 1/	Gross area	Nonforest area	Forest area	Proportion gross area in forest	Proportion of county forest land
	acres	acres	acres	percent	percent
Apolacon t., Little Meadows b.	15,800	8,000	7,800	49.4	3.4
Ararat t.	13,200	7,200	6,000	45.5	2.6
Auburn t.	33,000	24,800	8,200	24.8	3.6
Bridgewater t., Montrose b.	28,100	21,300	6,800	24.2	3.0
Brooklyn t.	15,200	9,800	5,400	35.5	2.4
Choconut t., Friendsville b.	14,100	7,100	7,000	49.6	3.1
Clifford t., Forrest City b.	26,700	15,000	11,700	43.8	5.1
Dimock t.	19,000	13,200	5,800	30.5	2.8
Forest Lake t.	19,100	11,700	7,400	38.7	3.2
Franklin t.	15,000	10,200	4,800	32.0	2.1
Gibson t.	20,600	11,800	8,800	42.7	3.8
Great bend t., Great Bend b., Hallstead b.	24,600	8,700	15,900	64.6	6.9
Harford t.	21,600	12,100	9,500	44.0	4.1
Harmony t., Lansboro b.	21,800	5,900	15,900	73.0	6.9
Herrick t., Uniondale b.	17,600	10,400	7,200	40.9	3.2
Jackson t.	17,300	10,200	7,100	41.0	3.1
Jessup t.	13,900	9,500	4,400	31.7	1.9
Lathrop t., Hopbottom b.	14,200	9,400	4,800	33.8	2.1
Lenox t.	26,300	14,900	11,400	43.3	4.9
Liberty t.	19,300	9,800	9,500	49.2	4.1
Middletown t.	18,500	10,100	8,400	45.4	3.7
New Milford t., New Milford b.	30,400	13,700	16,700	54.9	7.2
Oakland t., Oakland b., Susquehanna Depot b.	11,700	4,200	7,500	64.1	3.3
Rush t.	25,200	16,300	8,900	35.3	3.8
Silver Lake t.	21,200	11,800	9,400	44.3	4.1
Springville t.	20,200	13,500	6,700	33.2	2.9
Thompson t., Thompson b.	14,400	8,100	6,300	43.8	2.7
All civil divisions	538,000	308,700	229,300	44.5	100.0

1/ Abbreviations: t. - township, b. - borough.

Table 3.-- Forest area by forest types and conditions

Forest type	Saw-timber stands		Pole-timber stands		Unmerchantable stands		All stands	
	acres	percent	acres	percent	acres	percent	acres	percent
Northern hardwoods	17,600	64.2	72,200	75.4	92,200	90.5	182,000	82.4
White pine - hemlock	8,000	29.2	8,600	9.0	10,200	7.0	26,800	10.0
White pine - white oak - red oak	*	*	100	0.1	100	0.1	200	0.1
White oak - red oak - black oak	1,800	6.6	14,800	15.4	3,400	2.3	20,000	7.4
Chestnut oak	--	--	100	0.1	200	0.1	300	0.1
All types	27,400	100.0	95,800	100.0	106,100	100.0	229,300	100.0

*Negligible

Table 4.--Volume by forest types

Forest type	Saw-log volume M bd.ft.	Total Volume M cu.ft.
Sugar maple - beech - yellow birch	183,700	119,540
Aspen - gray birch - pin cherry	--	--
White pine - hemlock	55,000	24,500
White pine - white oak - red oak	200	90
Red oak - black oak - white oak	15,100	12,600
Chestnut oak	100	90
Scrub oak	--	--
Other	--	--
All forest types	254,100	156,820

Table 5.--Forest area by forest conditions and volume-per-acre classes

Forest condition and volume-per-acre classes	Area	Proportion of each condition	Proportion of total forest land
	acres	percent	percent
Merchantable:			
Saw-timber stands 1/ (bd. ft. per acre)			
8,000 and over	3,800	13.9	1.7
6,000 to 7,999	4,300	15.7	1.9
4,000 to 5,999	6,300	23.0	2.7
2,000 to 3,999	13,000	47.4	5.7
All saw-timber stands	27,400	100.0	12.0
Pole-timber stands 2/ (cords per acre)			
10.0 and over	37,700	39.4	16.4
5.0 to 9.9	58,100	60.6	25.3
All pole-timber stands	95,800	100.0	41.7
All merchantable stands	123,200		53.7
Unmerchantable:			
Saw-timber stands less than 10 acres	26,700		11.7
Pole-timber stands less than 10 acres	24,700		10.8
Young growth stands	54,700		23.8
All unmerchantable stands	106,100		46.3
All forest land	229,300		100.0

1/ In stands 10 acres or larger each acre of which has at least 2,000 board feet (lumber tally).

2/ In stands 10 acres or larger each acre of which has at least 5 cords (400 cubic feet) but less than 2,000 board feet.

Table 6. --Volume by forest conditions and volume-per-acre classes

Forest condition and volume-per-acre classes	Saw-timber volume (lumber tally) 1/		Total volume (including bark)			
	M bd. ft.	percent	M cu.ft.	percent	cords	tons
Merchantable:						
Saw-timber stands (bd. ft. per acre)						
8,000 and over	38,700	15.2	10,460	6.7	135,700	264,500
6,000 to 7,999	28,100	11.1	9,030	5.8	117,200	228,500
4,000 to 5,999	29,200	11.5	10,720	6.8	139,200	271,500
2,000 to 3,999	33,600	13.2	15,670	10.0	202,900	395,600
All saw-timber stands	129,600	51.0	45,880	29.3	595,000	1,160,100
Pole-timber stands (cords per acre)						
10.0 and over	27,800	10.9	33,490	21.4	440,400	890,200
5.0 to 9.9	22,400	8.8	32,890	20.9	433,200	876,100
All pole-timber stands	50,200	19.7	66,380	42.3	873,600	1766,300
All merchantable stands	179,800	70.7	112,260	71.6	1,468,600	2926,400
All unmerchantable stands	74,300	29.3	44,560	28.4	594,100	1,163,000
All forest land	254,100	100.0	156,820	100.0	2,062,700	4089,400

1/ Based on the International 1/4-inch rule which closely approximates green lumber tally.

Table 7.--Volume in merchantable stands by species groups

Merchantable class and species group	Saw-timber volume (lumber tally)		Total volume (including bark)					
	M bd.ft.	percent	M cu.ft.	percent	cords 1/	percent	tons 2/	percent
Saw-timber stands								
Conifers	40,400	31.2	10,690	23.3	125,800	21.1	221,800	19.1
Oaks, hickory, and hard maple	22,000	17.0	8,120	17.7	108,300	18.2	238,800	20.6
Other hardwoods	67,200	51.8	27,070	59.0	360,900	60.7	699,500	60.3
All species	129,600	100.0	45,880	100.0	595,000	100.0	1,160,100	100.0
Pole-timber stands								
Conifers	10,800	21.6	7,240	10.9	85,100	9.8	160,500	9.1
Oaks, hickory, and hard maple	12,500	24.9	14,740	22.2	196,500	22.4	437,400	24.8
Other hardwoods	26,900	53.5	44,400	66.9	592,000	67.8	1,168,400	66.1
All species	50,200	100.0	66,380	100.0	873,600	100.0	1,766,300	100.0
All merchantable stands	179,800		112,260		1,468,600		2,926,400	

1/ Based on 85 cubic feet per cord for conifers and 75 cubic feet per cord for hardwoods.

2/ Based on cubic feet-per-ton converting factors for the principal species.

Table 8.--Board foot volume in merchantable saw-timber stands by diameter classes and species groups

Diameter class (d.b.h.)	Conifers 1/		Oaks, hickory, hard maple 2/		Other hardwoods 3/		All species	
(Inches)	M bd.ft.	percent	M bd.ft.	percent	M bd.ft.	percent	M bd.ft.	percent
10	3,800	9.3					3,800	2.9
12	4,800	11.8	3,600	16.6	16,500	24.5	24,900	19.2
14	4,900	12.2	4,500	20.5	17,100	25.5	26,500	20.5
16	5,300	13.2	2,900	13.2	13,000	19.4	21,200	16.4
18	5,100	12.6	2,400	10.9	8,100	12.0	15,600	12.0
20	3,900	9.7	1,300	5.7	5,000	7.4	10,200	7.9
22 & up	12,600	31.2	7,300	33.1	7,500	11.2	27,400	21.1
All classes	40,400	100.0	22,000	100.0	67,200	100.0	129,600	100.0

1/ Principally hemlock and white pine, with some pitch pine.

2/ Principally hard maple with some white, red, and chestnut oak.

3/ Principally red maple, beech, white ash, and yellow birch, with some black cherry, basswood, black birch and elm.

Table 9.--Cubic foot volume in merchantable pole-timber stands by diameter classes and species groups

Diameter class (d.b.h.)	Conifers 1/			Oaks and hard maple 2/			Other hardwoods 3/			All species		
inches	M cu.ft.	percent	tons	M cu.ft.	percent	tons	M cu.ft.	percent	tons	M cu.ft.	percent	tons
6	2,190	30.3	48,600	4,580	31.1	136,100	14,610	32.9	384,400	21,380	32.2	569,100
8	2,290	31.6	50,700	4,160	28.2	123,300	12,700	28.6	334,200	19,150	28.8	508,200
10	1,450	20.0	32,100	2,610	17.7	77,400	10,030	22.6	264,000	14,090	21.2	373,500
12	720	10.0	16,100	1,950	13.2	57,700	4,260	9.6	112,200	6,930	10.5	186,000
14	590	8.1	13,000	1,440	9.8	42,900	2,800	6.3	73,600	4,830	7.3	129,500
All classes	7,240	100.0	160,500	14,740	100.0	437,400	44,400	100.0	1,168,400	66,380	100.0	1,766,300

1/ Principally hemlock and white pine, with some pitch pine.

2/ Principally hard maple with some hickory and red, white, chestnut, and scarlet oak.

3/ Principally red maple, beech, yellow birch, white ash and black birch with some black cherry, aspen, basswood, elm, red birch, gray birch, ironwood, and dogwood.

Anthracite Survey Papers

No.	Title
1	Survey of Forest Employment Possibilities in the Anthracite Region of Pennsylvania*
2	Intensified Protection of Wyoming Valley Forests Against Fire Through Use of Community Labor*
3	Tax Delinquency of Forest Lands in the Anthracite Region of Pennsylvania**
4	Volume Tables for Commercial Timber in the Anthracite Region of Pennsylvania*
5	The Forests of Luzerne County, Pennsylvania, in Relation to Employment and Welfare
6	The Population and Employment Outlook for the Anthracite Region of Pennsylvania
7	The Forest Situation in Pike and Monroe Counties
8	The Forest Situation in Dauphin and Lebanon Counties
9	The Forest Situation in Schuylkill and Carbon Counties
10	The Forest Situation in Wyoming and Sullivan Counties
11	The Forest Situation in Northumberland, Columbia, and Montour Counties
12	The Forest Situation in Luzerne and Lackawanna Counties
13	The Forest Situation in Wayne and Susquehanna Counties

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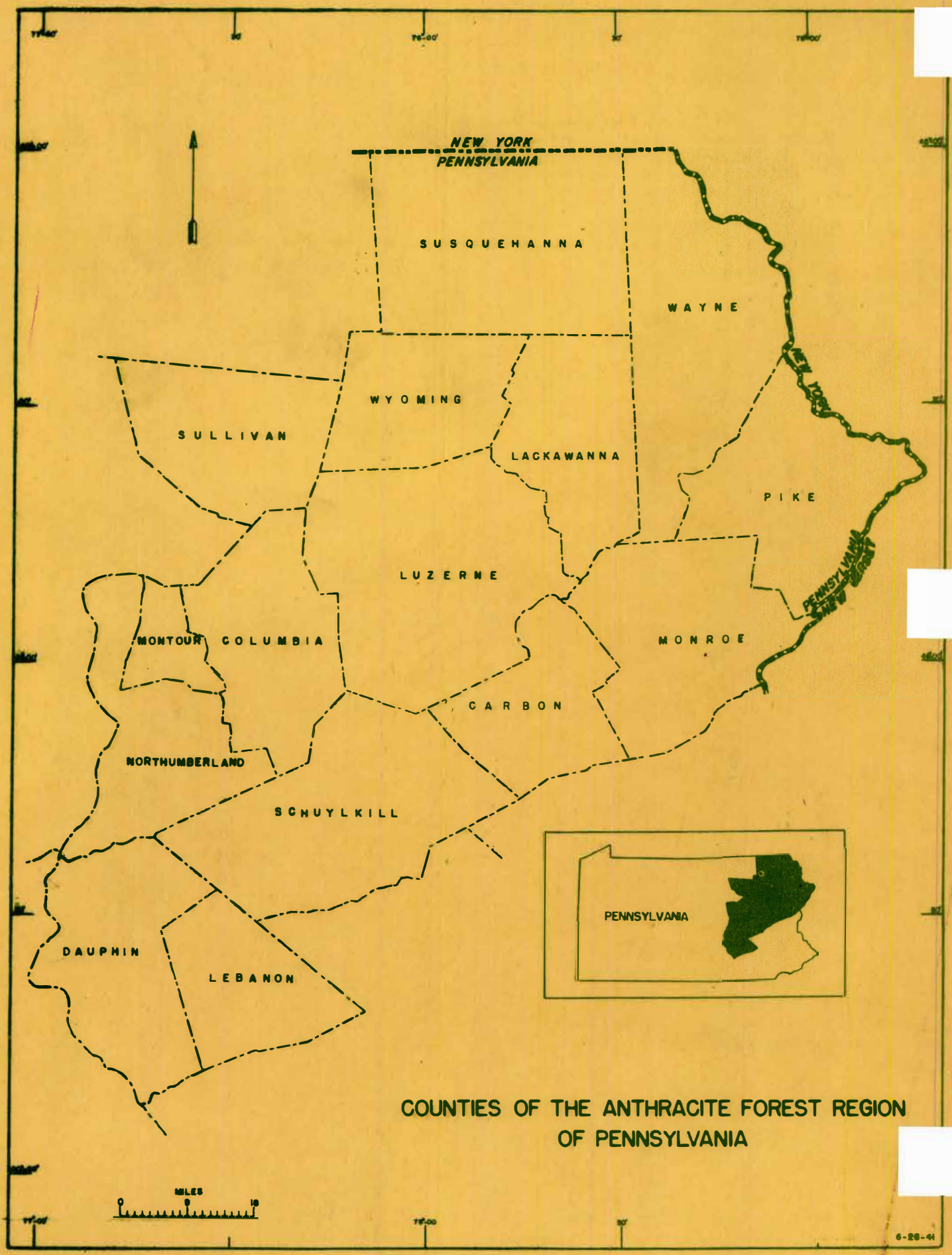

COUNTIES OF THE ANTHRACITE FOREST REGION
OF PENNSYLVANIA